



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/538,222	06/09/2005	Kazuyuki Nakanishi	273631US26 PCT	9360
22850	7590	08/24/2007		
OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314			EXAMINER STEVENSON, ANDRE C	
			ART UNIT 2812	PAPER NUMBER
			NOTIFICATION DATE 08/24/2007	DELIVERY MODE ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

patentdocket@oblon.com  
oblonpat@oblon.com  
jgardner@oblon.com

## Office Action Summary

Application No.

10/538,222

Applicant(s)

NAKANISHI ET AL.

Examiner

Andre' C. Stevenson

Art Unit

2812

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 07 June 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) 11-19 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-10 and 20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 09 September 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
  - 2) ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date 09/09/05
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date: \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

## **Detailed Action**

### ***Priority***

Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

### ***Information Disclosure Statement***

The information disclosure statement (IDS) submitted on 09/09/05 was filed before the first action on the merits. The submission is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement has been considered by the examiner.

### ***Election/Restrictions***

Applicant's election with traverse of Group I, claims #1-10 and 20 in the reply filed on 06/07/07 is acknowledged. The traversal is on the ground(s) that the subject matter of all claims 1-20 is sufficiently related that a thorough search for the subject matter of any one group of claims would necessarily encompass a search for the subject matter of the remaining claims.

This is not found persuasive because the semiconductor heat dissipating member claimed in Group I, can be practice for it's purpose without the CVD Plasma process claimed in Group II.

The requirement is still deemed proper and is therefore made FINAL.

### ***Claim Rejections - 35 USC § 102***

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Art Unit: 2812

Claims #1-10 and 20 are rejected under 35 U.S.C. 102(b) as being unpatentable by Yamamoto et al. (U.S. Pat. No. 4,783,368, U.S. Pat Date 11/08/88, File Date 11/05/86).

Yamamoto substantially shows the claimed invention, as shown in figures 1-12 and corresponding text, in an apparatus and manufacturing method, **pertaining to claim #1**, a semiconductor element heat dissipating member comprising: a conductive substrate (**column 15, lines 63-67; column 16, lines 1-19**); and an electrically insulating amorphous carbon film including hydrogen (**column 2, lines 53-67; column 3, lines 1-17**), wherein the electrically insulating amorphous carbon film is provided at least on a region of the conductive substrate on which region a semiconductor element is to be provided (**column 10, lines 26-35; column 16, lines 1-19; column 17, lines 21-29; column 19, lines 3-25**).

Yamamoto shows, **pertaining to claim #2**, a semiconductor element heat dissipating member according to claim 1, wherein a content of hydrogen in the electrically insulating amorphous carbon film is in the range of 20 to 60 atm% (**column 5, lines 19-24; column 6, lines 67 & 68; column 7, lines 1-5**).

Yamamoto shows, **pertaining to claim #3**, a semiconductor element heat dissipating member according to claim 1, wherein the electrically insulating amorphous carbon film further includes silicon (**column 5, lines 38-53; column 13, lines 19-58**).

Yamamoto shows, **pertaining to claim #4**, a semiconductor element heat dissipating member according to claim 3, wherein a content of silicon in the electrically insulating amorphous carbon film is in the range of 1 to 50 atm % (**column 5, lines 19-24; column 6,**

**lines 67 & 68; column 7, lines 1-5).**

Yamamoto shows, **pertaining to claim #5**, a semiconductor element heat dissipating member according to claim 1, wherein an electrically insulating organic film is provided on the side of the electrically insulating amorphous carbon film on which side the semiconductor element is to be provided (**column 3, lines 1-17; column 7, lines 6-25**). The Examiner notes that Yamamoto fails to mention explicitly the organic material is provided on the sides of the amorphous carbon layer. However, the Examiner notes that Yamamoto shows that the material is deposited in a gaseous form and that the mixture through out the chamber is uniform so as to promote a even layered covering of the substrate. Also, Yamamoto shows that a CVD method is a possible deployment procedure for the material. The Examiner takes the position that all these factors shows that the substrate is in an environment that would provide a complete an consistent layering of any material being processed. For these reason the Examiner takes the position that the claims of the applicant is indeed taught by Yamamoto.

Yamamoto shows, **pertaining to claim #6**, a semiconductor element heat dissipating member according to claim 1, wherein the conductive substrate is a metal substrate containing at least one of Al, Cu, Mo, W, Si and Fe (**column 9, lines 8-35**).

Yamamoto shows, **pertaining to claim #7**, a semiconductor element heat dissipating member according to claim 1, wherein the semiconductor element is a large-scale integrated circuit, or a power device selected from a bipolar-type transistor, an MOS-type transistor, or a diode (**column 1, lines 10-32**).

Yamamoto shows, **pertaining to claim #8**, a semiconductor element heat dissipating member

Art Unit: 2812

according to claim 1, wherein an elastic modulus of the electrically insulating amorphous carbon film is 40 to 150 Gpa (**column 10, lines 26-35; column 16, lines1-19; column 17, lines 21-29; column 19, lines 3-25**). The Examiner notes that Yamamoto does not state explicitly that the amorphous carbon film is 40 to 150 Gpa; however, Yamamoto uses the same material as claimed by the claimed language. The Examiner has not been able to located any special conditions that separates the claim language from the invention of Yamamoto. Therefore, the Examiner takes the position that the claimed language used by the applicant is taught by Yamamoto.

Yamamoto shows, **pertaining to claim #10**, a semiconductor element heat dissipating member according to claim 1, wherein a Vickers hardness of the electrically insulating amorphous carbon film is Hv 400 to 1500 (**column 10, lines 26-35; column 16, lines1-19; column 17, lines 21-29; column 19, lines 3-25**). The Examiner notes that Yamamoto does not state explicitly that the amorphous carbon film is Hv 400 to 1500; however, Yamamoto uses the same material as claimed by the claimed language. The Examiner has not been able to the same material as claimed by the claimed language. The Examiner has not been able to located any special conditions that separates the claim language from the invention of Yamamoto. Therefore, the Examiner takes the position that the claimed language used by the applicant is taught by Yamamoto.

Yamamoto shows, **pertaining to claim #20**, a semiconductor element heat dissipating member according to claim 1, wherein a thickness of the electrically insulating amorphous carbon film is 0.1 to 200  $\mu\text{m}$  (**column 3, lines 46-53 and 63-67; column 4, lines1-5; column 17, lines 21-29; column 19, lines 3-25**).

Art Unit: 2812

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Andre' Stevenson whose telephone number is (571) 272 1683. The examiner can normally be reached on Monday through Friday from 7:30 am to 4:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael S. Lebentritt, can be reached on (571) 272 1873. The fax phone number for the organization where this application or proceeding is assigned is (703) 308 7724.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308 0956. Also, the proceeding numbers can be used to fax information through the Right Fax system;

**(703) 872-9306**

Andre' Stevenson

08/19/07

  
MICHAEL LEBENTRITT  
SUPERVISORY PATENT EXAMINER